

## Re: What is the history of relativity theory? (continuation of Poincare thread)

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- *From:* <[juanrgonzaleza@xxxxxxxxxxxxxxxxxxxxxxxx](mailto:juanrgonzaleza@xxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Wed, 7 Sep 2005 06:26:18 +0000 (UTC)
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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

<[juanrgonzaleza@xxxxxxxxxxxxxxxxxxxxxxxx](mailto:juanrgonzaleza@xxxxxxxxxxxxxxxxxxxxxxxx)> a=E9crit dans le message de news:  
3134.217.124.88.181.1125488638.squirrel@xx

- > Your "Physics need not to be mathematically correct, it only need to be
- > descriptive and predictive" is completely wrong. I think that you are
- > confounding science with pure empirics or "enginnering".

Not at all. That's precisely the case for the incompatibility between quantum mechanics and general relativity, there is no unified mathematical theory while each model works in certain conditions. Even the interpretation of quantum mechanics isn't logically sound, we use one or another rule according to the situation.

In physics, there are many places where heuristics reasoning is used. Granted, they are shortcuts for a rigorous formalism, but Einstein could have taken those shortcut without his physical reasoning being false. The only important thing is the first principles, even if to get at them, one uses "illegal" calculus. The end justifies the means, while in mathematics, the means suffice to themselves.

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Hum, that is not an argument for I said. The problem of "incompatibility" (really there is no one) of QM and GR is due to they are approximate theories and do not apply in the field of the other. GR is not mathematically incorrect, simply is a classical formulation and, therefore, does not apply in the quantum regime. In physics, consequences (laws) may be derivable from axioms or postulates, illegal "calculus" is not allowed except in pure empirical studies, engineering, etc.

The fact, Einstein used the same axioms used by others (first postulate i=

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directly from Poincar=E9 and second postulate is present in Poincar=E9 -n=  
ot in  
the form of postulate-), but applied incorrect mathematical and physical  
thoughts to derive knowledge that already was know to others. Therefore 1=  
)  
he is doing nothing new 2) he already did know that would obtain.

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

> Impossible to sustain that Poincar=E9 was doing only mathematics :-)

Indeed, as any absolute statement. Yet, Poincar=E9 was marked by the  
mathematical method, which is more a handicap than an advantage for doing  
physics. Never in mathematics are the axiom challenged, they are a firm =  
and  
reassuring ground. That explain why he kept hidden assumptions.

\*\*\*\*\*

You claimed that Poincar=E9 was "philosophing", whereas Einstein was doin=  
g  
serious physics. I already showed that was incorrect, showing how Poincar=  
=E9  
was computing physical stuff and comparing with experimental data, when  
Einstein was only "phylosophing" about the axiomatic basis for "his"  
theory.

As already said the LT and other stuff do not follow from two Einstein  
postulates. Precisely, Poincar=E9 was characterized by precision on the  
mathematical structure of the theory of relativity, whereas Einstein kept  
hidden assumptions. How even Einstein recognized in posterior years, the  
two initial postulates might be completmented by at least three new  
"axioms".

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

>> Physics is about finding the axioms, whatever the method used.  
>> Mathematics is about working out the consequences of these axioms, in=  
a  
perfect rigorous way. They are two very different trades.

> Incorrect definition of both math and physics.

Sorry, it's correct, even if oversimplified. Especially, the fundamental  
difference is made clear.

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I am sorry to say this again but you say is incorrect. In mathematics, the detailed formal structure of the axiomatic system is very important, because math is an axiomatic-formal system.

Physics is not about finding the axioms. A clear example is CKC vs MTE formulations of thermodynamics. The axioms are completely different; still the physics (thermodynamics) is exactly the same. You also fails to understand that Einstein relativity is not superior to Poincaré relativity (because Einstein postulate of constancy of  $c$  does not introduce new physics). Absence of that postulate in Poincaré relativity does not imply that his theory was less successful.

Again, I explain to you that absence of zeroth principle in MTE formulation of thermodynamics does not imply that was not 100% compatible with CKC formulation of thermodynamics.

However, from a mathematical point of view both formulations are very different. The CKC is an "integral approach" for a mathematician, whereas MTE is a "differential geometric approach" for a mathematician.

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

>> Einstein used more his imagination than his mathematical knowledge, and  
>> created something new.

> It is really difficult for us to understand the use of imagination by  
> means of the direct copy of the work of others.

You take the conclusion as the hypothesis. Einstein imagined something that was different from what was taken for granted by the others, and explained it explicitly as a "hidden assumption".

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I am fixing your point.

You claim that I, in basis to historical evidence I (and others) provided, am taking "the conclusion as the hypothesis". However, next I claim "Einstein imagined something that was different from what was taken for granted by the others".

Were you inside his brain to know that he imagined? I prefer historical

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arguments; I see that his writings are copy of others (even literal ones).  
I prefer see that do not cited. I prefer to see that said that newer read  
Poincar=E9 when is false. I prefer see that said that did not know previo=  
us  
memorie by Lorentz, but begin his derivation of the LT from a Galilean  
transformation exactly as Lorentz did, use the same notation that Lorentz  
used, claim in his letters to submit papers that newer submitted, etc.

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

>> "I make you notice that I don't use the term "constant" but  
>> "independent." That c is a constant doesn't make the velocity of lig=  
ht  
independent on the  
> frame of reference. It only says that some measurement process gives t=  
he  
> same value in any frame. You make that conclusion by using a hidden  
> assumption, namely that the measure of the light speed \*is\* the real li=  
ght  
> speed, that is, the light speed defined in the first principles."

> How can c be independent being no a constant?

Constant in what? Space? Time?

\*\*\*\*\*

Again your double criterion is intriguing. Poincar=E9 claims that c is  
constant and you say constant in what? Space? Time?

Einstein wrote in his famous 1905 article "light is always propagated in  
empty space with a definite velocity c which is independent of the state  
of motion of the emitting body." Was Einstein claiming that c was functio=  
n  
of space? of time? of the state of experimental apparatus used? of  
temperature in Oklahoma? of...?

Poincar=E9 is still more precise: c is a constant. What is that we say to=  
day  
:-)

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

> How can c be constant being dependent?

Constant in space but dependent on the frame?

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Re: What is the history of relativity theory? (continuation of Poincare thread)

Aha! Then the new definition of constant is something that is "dependent of" and, therefore, is not constant. Ok! Now  $2x$  is a constant and  $2$  is a function. I understand now.

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

Anyway, you didn't defined what is  $c$ . A numerical constant? The measure=  
d  
velocity of light? By which procedure? The postulated velocity of light=  
?

You make a lot of hidden assumption. And as Poincar=E9 didn't explicit m=  
uch  
more, probably did he some also and thought differently to what appears.

In contrast, Einstein defined everything clearly and unambiguously, as he  
had a clear mind. Poincar=E9 was still groping around in his haze.

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Poincar=E9 did. In contrast, Einstein only copied, for example copied the  
definition of simultaneity of events in different spatial points by means  
of a light signal as well as the definition of time in a moving reference  
system by means of light signal, etc. Used the same arguments that  
Poincar=E9 regarding to aether, etc.

Moreover, ambiguity of Einstein methods was even recognized by him but yo=  
u  
ignore all of this. Einstein was unable to recognize that LT implied a  
link between space and time and four-dimensional formulation was lacking,  
failed to obtain the relativistic force and newer was able to formulate a  
mechanics (only a kinematics over the work of others), etc.

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

- > The no constancy of  $c$  follows from an ultra-simple algebraic
- > (multiplication by  $1/t$ ) manipulation on Galilean transformation.
- >
- >  $c' = 3D c + v$
- >
- > with  $v$  the source velocity. In Galilean physics light velocity is not
- > independent of frame and is not constant,  $c' = 3D c'(v)$
- >
- > Now, Poincar=E9 neglects the transformation and defines a new simultane=  
ity
- > based in LT.

Well, only handwaving, that besides doesn't appears in the Poincar=E9's  
writings.

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Do not appear in Einstein writings that space and time are real quantities. Does that imply that are imaginary or really, it is clear that Einstein was using real quantities?

Poincaré neglected the GT, defined a new simultaneity based in the LT and assumed that the LT is the correct transformation for a new mechanics. The constancy of  $c$  follows in a trivial manner. Poincaré did not write the demonstration (two elementary algebraic manipulations), but wrote the result  $c$  is a constant for both EM and gravitation.

Your attempt to show that postulate of  $c$  is fundamental is even refuted by own Einstein (1948).

"With the aid of the Lorentz transformation the special relativity principle can be formulated as follows: the laws of Nature are invariant with respect to the Lorentz transformation (i. e. a law of Nature must not change, if it would be referred to a new inertial reference system obtained with the aid of Lorentz transformation for  $x, y, z, t$ )." That was Poincaré did

PoR more LT = 3D PoR more "constancy of  $c$ ".

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<toto@xxxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

> > "Notice finally that he only said that  $c$  is common to gravity, without saying that  $c$  doesn't depend on the frame, and because he postulated that the Lorentz transformation applies also to the gravitational force. Notice, > to the force, not to space. The important word is \*common\*, as would show the context."

> He says a "common constant". The important words are \*common constant\*.

Common to what? You need to be very precise, otherwise we won't advance a bit. Besides, could you cite any place where  $c$  isn't considered a "constant", from the very beginning since it is known?  $c$  is a fundamental constant since Maxwell, derivable from other measurable constants. In th=

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theory of the ether, it is the relative \*constant\* velocity between light and ether. Poincaré meant that c was also to be used in gravity, and meant

nothing else, otherwise he would have stated it separately. French is a very precise language, that's why it is used for arbitrating fencing. If something is stated unclearly, it isn't stated at all, period.

\*\*\*\*\*

Poincaré said common constant. I replied omitting "constant". I replied saying that said "common constant". It is clear what mean \*common\*

Yes! c was already known like constant regarding Electromagnetism but was not constant regarding mechanics (already explained why). Therefore, conflict between mechanics and EM. Poincaré solved by assuming that c was as a constant always, therefore the GT was not correct and a new mechanics arise, one that he developed.

Aether does not modify Poincaré priority because aether in Poincaré was as

not a mechanism for detecting absolute motion (was a kind of "relativistic aether").

However, the "clarity" of Einstein (that you claim) is absent. In fact, in posterior years Einstein returned to aether and claimed that his theory of relativity was a theory of aether. Popular (inaccurate) biographies highlights that the main contribution of Einstein was the abandoning of concept of aether :-)

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

> If c is constant then it cannot depend on frame, because then is not a > constant, it is a function of frame.

No, it's a spurious thinking. You make a hidden identification between a numerical constant and a measure of length / time. It's that sort of loose reasoning that kept at bay all those great physicists.

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Numerical constant? Poincare always calls to c the velocity of light

$$c = \text{3D (space)} / (\text{time})$$

space and time are defined from a system of reference: Earth, laboratory, etc. in 1900.

and assumes that c is constant (which contradict non relativistic mechanics) and the same in all directions. What part do not you

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understand?

Perhaps I would rewrite for you Poincaré 1905 quote

"If we were to accept the relativity principle, then we would find a common constant in the law of gravity and in electromagnetic laws, the velocity of light."

Am I doing a hidden identification between the numerical constant  $c$  of EM and a measure of length / time in mechanics or is clearly Poincaré saying that velocity of light is constant and extending his domain to gravitation (where there are not Maxwell equations)?

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<toto@xxxxxxx> on 2 Sep 2005 19:29:37 +0000 (UTC) wrote:

> Ah, and the contraction of bodies is one of basis in Einstein relativity.

No, you didn't read his 1905's article. The bodies aren't contracted, their measures using the procedure he fully describes give a lesser value. He don't speak about a constant force like Poincaré.

\*\*\*\*\*

Hum! Again wrong. It is not true that are his measures which are contracted. It is more easy to see from time dilation. It is time which dilates due to motion. Independently I am observing/measuring or no. Moreover,

Your "The bodies aren't contracted, their measures" is beyond physics.

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Center for CANONICAL SCIENCE)

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- *Follow-Ups:*
    - ◆ *Re: What is the history of relativity theory? (continuation of Poincare thread)*
    - ◇ *From: Juan R.*

Re: What is the history of relativity theory? (continuation of Poincare thread)

- ◆ **Re: What is the history of relativity theory? (continuation of Poincare thread)**  
◇ From: Javier Bezos
- ◆ **Re: What is the history of relativity theory? (continuation of Poincare thread)**  
◇ From: Juan R.
- ◆ **Re: What is the history of relativity theory? (continuation of Poincare thread)**  
◇ From: =?unknown?q?Cl=2EMass=E9?=-

- Prev by Date: **Re: Is 'time' time or is it not.**
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